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STATISTICAL BULLETIN

Metropolitan Life Insurance Co.

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ARE FATAL INDUSTRIAL ACCIDENTS DECREASING?

Much interest attaches to the experience of the past decade for industrial accidents. The country-wide development of workmen's compensation insurance, the accompanying development of industrial safety work, the rise of industrial medicine and surgery, have all taken place practically within this period. Attention has been directed, as never before, to the incidence of serious accidents in industry and to their prevention. Commendable and demonstrable progress has been made in certain industries in the control of industrial accidents. Where uniform and dependable records have been available, it has been shown that life and limb can be safeguarded by protective measures adopted after a careful study of plant hazards.

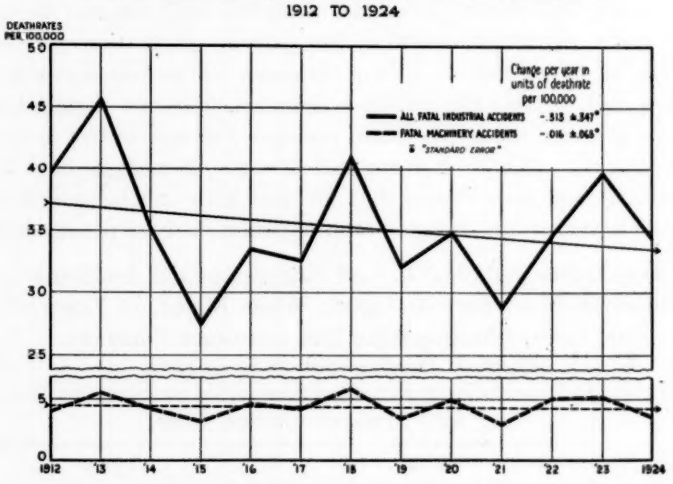
Deathrates per 100,000. All Fatal Industrial Accidents and Industrial Machinery Accidents, White Males, 15 Years of Age and Over. Metropolitan Life Insurance Company. Industrial Department, 1912 to 1924.

YEAR	DEATHRATE PER 100,000			
	CRUDE		TRENDED	
	All Industrial Accidents	Machinery Accidents	All Industrial Accidents	Machinery Accidents
1924	34.4	3.5	33.5	4.2
1923	39.7	5.1	33.8	4.3
1922	34.7	5.0	34.1	4.3
1921	28.8	2.9	34.4	4.3
1920	34.9	4.9	34.7	4.3
1919	32.1	3.4	35.0	4.3
1918	40.9	5.8	35.3	4.3
1917	32.5	4.2	35.7	4.3
1916	33.5	4.6	36.0	4.4
1915	27.5	3.2	36.3	4.4
1914	35.2	4.2	36.6	4.4
1913	45.7	5.5	36.9	4.4
1912	39.6	4.0	37.2	4.4

The effect of this decade of preventive effort upon the experience of adult white male wage-earners insured in the Industrial Department of the Metropolitan Life Insurance Company may be seen from the graph below, which shows the deathrates for all industrial accidents, and for machinery accidents in industry, over the period 1912 to 1924. There was a slight downward trend in the deathrate for all industrial accidents combined: about one per cent. per annum, for the period. The deathrate for machinery accidents in industry declined slightly, about one-half of one per cent. per year.

Deathrates per 100,000 Fatal Industrial Accidents and Machinery Accidents in Industry

WHITE MALES, 15 YEARS OF AGE AND OVER
METROPOLITAN LIFE INSURANCE COMPANY, INDUSTRIAL DEPARTMENT
1912 TO 1924



The increase in accidents in any given year may be due to increased industrial activity in times of boom and expansion. Men in industry, working under stress for maximum production, do not exercise the thought and care that would be used in slack times. The fluctuation in the number of men employed, as well as the intensity of industrial activity, also definitely influences the industrial accident rate. The general trend of accidents in industry is affected by the introduction of labor-saving devices, that is, by the substitution of mechanical for manual processes. Little attention has been given to this latter factor in industrial studies.

THE COST OF BEING BORN.

In the November issue of the BULLETIN, discussing the *Value of Human Life*, we pointed out that man, like any other productive machine, has a first cost, or cost of installation, the first item in the profit and loss account upon which an estimate of his economic value must be based. As every parent knows, man comes into the world by no means as a gratuitous gift. The new world citizen must pay—or rather have paid for him—his price of admission, which is absorbed by the physician or midwife, nurse, and others who assist, one way or another, at the initiation. There is, however, no fixed rate of charge. The cost of being born varies greatly with the economic status of the parents; and even among people of one class, say those of moderate or slender means, there will always be much divergence occasioned by racial tradition, by wisdom, or lack of it, in apportioning expenses among the several items of the family budget. Any numerical estimates that may be given of the cost of childbirth must, therefore, be clearly understood as representing a rough average, about which the cost in individual cases will range.

There are several alternative methods of maternity care from which the expectant mother may choose. Naturally, costs will depend upon the type and quality of the service selected; upon whether the woman is attended by an obstetrician, a general practitioner, or a midwife; upon whether she goes to a hospital or is confined at home. According to official figures for New York City, 1924, there were registered 130,436 births in that year. Of this total, 104,579 births, or 80 per cent., were attended by physicians; less than 4 per cent. of those so attended were taken care of by the outdoor hospital departments; approximately 50 per cent. of them took place in institutions; and the remainder occurred in the homes of the patient under the care of a private physician. The least expensive type of maternity care is that provided by the outdoor hospital service maintained by a few hospitals. Sometimes a flat rate of $10 is charged and sometimes service is absolutely free. This method of treatment, however, accounts for only a small proportion of confinements and is apparently diminishing in popularity, as shown by the declining number of births so attended. On the contrary, hospitalization of maternity cases is steadily increasing.

The minimum average maternity cost, when care is given in the hospital ward, is around $150. This estimate allows $50 for hospital expenses (the average amount charged in the wards); $70 for service

(hiring a working housekeeper), $25 for the baby's layette, and $5 for incidentals, such as hospital fees for prenatal care, the cost of which is very small, as only 25 cents is charged for each clinic visit.

For a more adequate type of hospital service, a minimum figure will be in the neighborhood of $250. Keeping the price of service, layette, and incidentals as before, the extra $100 will provide care in a semi-private hospital room instead of in a ward. There is a real difference in quality between these two types of service. In normal ward cases, delivery is given by senior interns under the direction of the house or visiting staff. In abnormal cases, the visiting physician does the actual work himself. In the semi-private rooms, on the other hand, service is given by one of the staff obstetricians. Semi-private patients need not attend the public prenatal clinics, but are entitled to private consultations with the staff doctor who is to attend them. The average hospital bill for such service is about $150. This is probably the type of treatment most commonly selected by families in the $2,500 income class, for records of a few of the large maternity hospitals show that patients are almost equally divided between the wards and private rooms; and since all women of the very low income levels must go into the wards, most of the women financially better off apparently choose the more expensive service. Instead of treatment by the house obstetrician, the semi-private patient can have her private doctor take care of her at approximately the same cost.

Costs for home confinement on a scale comparable in quality to ward treatment, will usually run somewhat higher than the minimum hospital rate, if the same amount of service is employed. The extra supplies which the mother requires in such cases can be bought for about $10 and additional nursing care can be procured for around $20. This figure covers the service given by visiting nurse organizations. The $20 average balances the large number of cases which receive no nursing care against those where nursing costs much more. However, allowing, as a bare minimum, $50 for the doctor's fee, costs can, perhaps, in this case also, be kept down to $150. For an additional $100, a physician charging higher fees can be called in and more adequate nursing care given. These figures must be understood as representing actual minimal costs, as far as they could be ascertained, and not in any sense as a criticism, approval, or commendation of the adequacy of any particular scale of fees. It is realized that in not a few instances, even among persons in very moderate circumstances, the medical costs run up to very

high figures. Those who insist on the service of a skilled obstetrician must be prepared to pay much larger fees. Two hundred dollars is considered a minimum fee for the service of a specialist and the other necessary items then mount proportionately higher to a total of not less than $500. Among the well-to-do, the resulting costs probably do not fall much below $1,000. It is realized, however, that the number of families able to pay such sums is so small that the effect of including them will presumably not change the average very appreciably.

There are many confinements at which no doctor is in attendance. In 1924, close to 20 per cent. of all births in New York City were attended by midwives. The extent to which midwives are employed depends largely upon nationality. In a study of sickness costs in workingmen's families made by Dr. LEWINSKI-CORWIN in 1918, it was found that over 87 per cent. of all mothers in Italian and Slavic families were delivered by midwives. It is extremely difficult to estimate the cost of such treatment because of the unstandardized condition of the occupation. However, it is believed that $35 is the average fee which a midwife receives at the present time. As the midwife gives postpartum nursing care, there is rarely any expenditure for nursing service—hence costs run lower than in the case of treatment by a physician.

To sum up, if maternity care is given by a general practitioner either in a patient's home or in a hospital, the minimum cost will be around $150; better care can be procured for $100 more. The service of a specialist raises this minimum to between $400 and $500. Treatment by midwives and the outdoor hospital service cost correspondingly less. In round figures, we may say that for the rank and file of the community, provided no abnormalities of labor occur, it costs from $200 to $300 to be born. This outlay may not be a big item in the total cost of a man, since it occurs but once for each individual, and may, therefore, be considered as distributed over the mean length of life, say 55 years. But the fact is that this item has actually to be met at one point of time, and, coming thus as a lump sum, it is in most families of moderate means felt as a considerable burden for the parents. In fact, it is undoubtedly the anticipation of greatly increased expenses, the sudden demands made on the family exchequer when a child is born and for some time after, that causes many people of limited income to favor the policy of the restricted family.

SEASONAL VARIATION OF TYPHOID FEVER CASE-FATALITY.

At seasons of the year when the number of typhoid fever cases is greatest, the case-fatality of the disease is lowest. In many states and cities typhoid fever reaches the maximum, for cases, in September and October. At this same time, the number of deaths per 100 cases is at a minimum. With the advent of colder weather, the number of cases falls off, and the fatality-rate, reckoned against cases, rises to a high figure in the late winter and early spring. This phenomenon has been observed in numerous studies of typhoid fever, notably by WINSLOW,* who collected data for various areas of the United States prior to 1902.

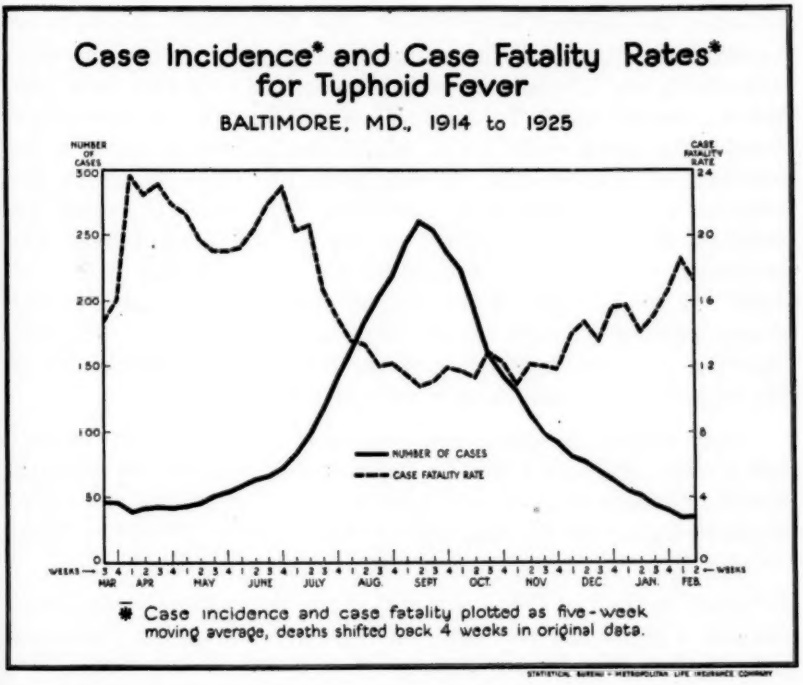
In the course of a comprehensive survey of typhoid fever statistics now being made by the Metropolitan Life Insurance Company, it has been possible to supplement WINSLOW'S earlier data from the more recent reports of the states and cities and from the reports of the United States Public Health Service. The present note relates to the facts for Baltimore, Md., for the period 1914-1925. The number of cases and of deaths from typhoid fever reported in each week of this calendar period were first abstracted. The deaths were then moved back four weeks, in order to have them relate to the cases from which they originated. The cases and deaths thus paired for corresponding weeks in each year, were then aggregated for the whole period and the resulting figures were smoothed by a five-weeks moving-average. The case-fatality rates were then computed, and in order to secure a somewhat more even line on the graph for case-fatality, this series was subjected to another smoothing process by means of a five-weeks moving-average. The findings are displayed in the graph on page 7. It will be seen that when the case-incidence of the disease was low, the case-fatality rates were high.

Various explanations have been offered to account for the seasonal swing of the case-fatality rates in typhoid fever. It may be true, as WINSLOW points out, that there is a difference, from season to season, either in the virulence of the typhoid bacillus or in the vital resistance of the human organism. The fact that case-fatality rates are high during cold weather or shortly after the lowest temperatures of the winter are recorded, may be due to a greater number of pulmonary complications among typhoid fever cases. There is also a possibility that at seasons of the year when the typhoid bacillus is so widely dispersed as to produce a large number of cases, its

*WINSLOW, C.-E. A., *A Statistical Study of the Fatality of Typhoid Fever at Different Seasons.* Quarterly Publications of the American Statistical Association, September, 1902.

capacity to produce death may be at a minimum, that is to say, capacity to infect may vary inversely with the capacity to produce death.

This phenomenon of a high case-fatality rate coincident with a low incidence, or morbidity rate, has been observed for other diseases. This seems to hold true whether the data are taken from the routine records of health departments or from the reports of the hospitals. In a study of measles incidence and case-fatality in New



York City,* it was found that in the summertime when measles incidence was at a low point, the indicated case-fatality rates were highest. In the late winter and early spring, when measles reaches its point of maximum incidence, the case-fatality rates of the disease are lowest. This suggests that the situation observed for typhoid fever case-fatality rates may be chiefly a function of attenuation and dispersion of the invading organism and not of season. Further inquiry on this point seems to be indicated.

*Metropolitan Life Insurance Company *Statistical Bulletin*, October, 1924.

HEALTH RECORD FOR NOVEMBER, 1925.

The November deathrate in the Industrial populations of the United States and Canada, which may always be gauged by the figure for the 16,000,000 Industrial policyholders of the Metropolitan Life Insurance Company, was only eight per 1,000. This, with a single exception, November, 1924, was the lowest November figure ever recorded among this important cross section of the population.

The record for the month was also satisfactory with respect to most of the important causes of death. Most of the increases recorded, as compared with October, were either small, or were to be expected on account of the seasonal incidence of certain diseases. Pneumonia and influenza are cases in point; and even with these conditions, the November, 1925, rate is low as compared with most other years. The health record for the month was featured, as has been the case with all prior months of 1925, with low rates for all of the principal epidemic diseases of childhood. The excellent record for tuberculosis continues. Every month of the current year has reported a lower deathrate than did the corresponding month of 1924. It is now assured, beyond all question, that not only will a new minimal mortality for tuberculosis be recorded in 1925, but that the per cent. reduction over the preceding year will be one of the largest year-to-year declines ever recorded.

Heart disease, for some reason, registered quite a rise over November a year ago, and a smaller increase was recorded for Bright's disease. Deaths from diseases associated with pregnancy and childbirth, were also more frequent than in October and in November, 1924.

This year's record for typhoid fever, it now appears, will not be so favorable as that for 1924. In eight of the eleven months that have elapsed, a higher typhoid rate was registered among the Industrial policyholders than for the corresponding month of last year. The situation is by no means alarming, as compared with earlier years, but 1925 now appears unlikely to go into public health history as a year marking improvement for typhoid over its immediate predecessor.

The general deathrate for the large cities of the United States, in November, was 12.4 per 1,000, which exceeds slightly the rate for the previous month and that for November a year ago (12.0). There was increased prevalence, as compared with October, of diphtheria, influenza, measles, malaria, scarlet fever, and smallpox, with fewer cases of typhoid fever and poliomyelitis. Compared with November, 1924, there were case reports of influenza, measles, poliomyelitis, scarlet

fever, typhoid fever, and whooping cough, with decreases in the number reported for diphtheria, malaria, and smallpox.

Increased prevalence of diphtheria was recorded in most of the states for which data are available. In most instances, these increases were slight. In Illinois, however, 440 cases were reported for the first three weeks of November as against 283 during the same weeks of October. In Portland, Oregon, it became necessary to close two schools. A school was also closed at Bridgetown, Nova Scotia, and there was a severe outbreak in Redvers, Sask.

Measles was quite generally prevalent. In Massachusetts, Illinois, and New York (exclusive of New York City), there was four times as many cases reported during the first three weeks of November as in the corresponding weeks of October. Large increases were also shown for Connecticut, Indiana, New Jersey, and Wisconsin. In Ashtabula, Ohio, children under 15 years were not allowed to attend Sunday school, moving pictures, and other public gatherings, although the schools remained in session. There was an outbreak at Moose Jaw, Saskatchewan; and in Acme, a small town in Alberta, the schools were closed and many families placed under quarantine. In Washington County, Rhode Island, the disease was very prevalent, the total number of cases in five towns approximating 200. At Hoxsie, Kent County, an outbreak occurred in an institution, affecting eight of the 36 child inmates.

Scarlet fever increased in most of the states, more especially in New Jersey and Wisconsin, with fairly large increases in Illinois, Indiana, Massachusetts, and Michigan. More or less serious outbreaks were reported from Evansville, Indiana; Elgin, Illinois; Merchantsville, New Jersey; Greenville, Pennsylvania; and Colon, Michigan. In the two last named places, it became necessary to close the schools.

Influenza cases increased sharply in Georgia during November; 341 cases were reported in the first three weeks, as compared with only 31 during the corresponding weeks of October.

Smallpox appears to be quite prevalent in several states. In Indiana, for example, case reports increased from 29 for the first three weeks of October, to 164 for the same weeks of November; in Washington, from 33 to 114; and in California, from 51 to 109. In South Sioux City, Iowa, it became necessary to close the schools and vaccinate a large number of children and adults. Indianapolis reported placing in quarantine, an average of nearly two cases a day, and

unvaccinated persons were dismissed from several Columbus, Ohio, schools.

Poliomyelitis cases declined during November, but outbreaks which were serious enough to necessitate closing of public schools occurred at Mondovi, Wisconsin, and Fairbury, Nebraska,

Six cases of typhus fever were reported from Georgia during November.

The following important public health activities of the month may be noted. A health survey of Baltimore is being undertaken under the direction of Dr. V. L. ELLICOTT, epidemiologist. It is planned to divide the city into "Health Units" according to variations in the types of the population and to study each division. A community health conference was held, November 13th, in Greeley, Colorado. This was financed by the Public Health Association of Weld County and by the Red Cross. The University of Colorado, the Child Welfare Bureau of the State Board of Health, the State Tuberculosis Association, the State Dental Association, and the State Psychopathic Hospital were participants and local physicians and dentists co-operated.

The following table shows the mortality among the Industrial policyholders for November, 1925; October, 1925; November, 1924, and the year 1924.

METROPOLITAN LIFE INSURANCE COMPANY.

Deathrates* per 100,000 for Principal Causes, Premium-paying Business in Industrial Department. (Annual Basis.)

MONTHS OF OCTOBER, 1925; NOVEMBER, 1925, AND OF NOVEMBER, 1924.

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*			
	Nov., 1925	Oct., 1925	Nov., 1924	Year 1924
TOTAL—ALL CAUSES	801.8	796.1	793.4	905.2
Typhoid fever	5.6	6.9	5.3	4.4
Measles	1.7	.7	1.1	7.2
Scarlet fever	2.0	2.0	3.7	4.4
Whooping cough	3.8	7.1	4.8	7.4
Diphtheria	13.8	9.5	13.8	13.1
Influenza	13.8	6.6	9.8	16.0
Tuberculosis (all forms)	78.4	80.9	83.0	104.2
Tuberculosis of resp'y system	69.9	70.9	73.3	92.3
Cancer	66.2	64.6	67.9	70.2
Diabetes mellitus	11.8	13.7	12.9	14.8
Cerebral hemorrhage	47.1	43.1	55.6	60.1
Organic diseases of heart	119.3	103.6	109.0	123.4
Pneumonia (all forms)	77.0	52.3	70.6	88.6
Other respiratory diseases	11.6	10.0	12.1	13.8
Diarrhea and enteritis	29.6	60.6	27.3	32.2
Bright's disease (chronic nephritis)	62.1	61.5	59.4	65.3
Puerperal state	15.1	12.3	12.4	16.8
Suicides	6.6	6.8	7.6	7.2
Homicides	7.2	6.7	7.9	7.1
Other external causes (excluding suicides and homicides)	57.6	63.3	59.4	62.5
Traumatism by automobiles	17.0	20.8	17.4	15.7
All other causes	171.6	183.8	169.8	186.5

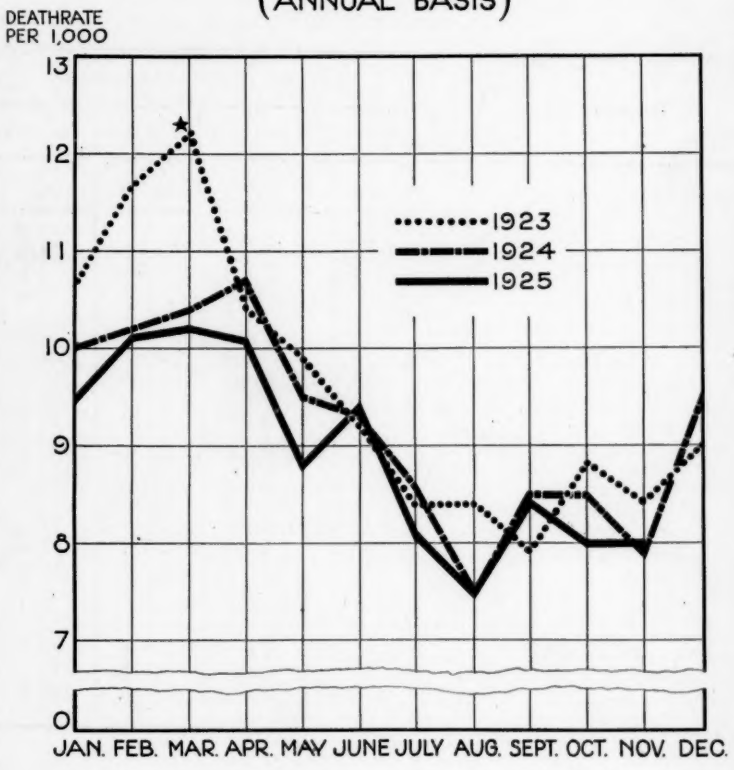
*All figures include infants insured under one year of age.

Correspondence on the subjects discussed in these BULLETINS, may be addressed to: The Editor.

STATISTICAL BULLETIN,
Metropolitan Life Insurance Company,
1 Madison Avenue, New York City.

DEATHRATE PER 1000
in SPECIFIED MONTHS *of*
1923, 1924, 1925

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT
(ANNUAL BASIS)



	1923	*1924*	*1925*		*1923*	*1924*	*1925*
JAN.	10.7	10.0	9.5	JULY	8.4	8.6	8.1
FEB.	11.7	10.2	10.1	AUG.	8.4	7.5	7.5
MAR.	12.2	10.4	10.2	SEPT.	7.9	8.5	8.4
APR.	10.4	10.7	10.1	OCT.	8.8	8.5	8.0
MAY	9.9	9.5	8.8	NOV.	8.4	7.9	8.0
JUNE	9.2	9.3	9.4	DEC.	9.0	9.5	

★ *Beginning with March, 1923, figures include mortality of infants under one year of age.*

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